CANDIDATE NUMBER.....

AFRICA UNIVERSITY
A United Methodist-Related Institution

"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE

NSLS 200: BLOOD TRANSFUSION AND IMMUNOLOGY

END OF SECOND SEMESTER FINAL EXAMINATION

April/ May 2023

LECTURER: DR A MARAMBA

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
2. Answer **all** questions in sections A on the question paper.
3. Answer **all** questions in section B on separate answer sheets provided.
4. Answer any **2** questions in section C on separate answer sheets provided
5. The mark allocation for each question is indicated at the end of the question
6. Credit will be given for logical, systematic and neat presentations in sections B and C

CANDIDATE NUMBER……

SECTION A : MULTIPLE CHOICE [50MARKS]

- **Answer all questions by encircling the correct response T for TRUE or F for FALSE for each statement in all the questions**
- **Each correct response is allocated half mark**

1. The following constitute positive reactions in blood bank:

T F a) rouleaux formation

T F b) haemolysis

T F c) inflammation

T F d) agglutination

T F e) elution

2. Technical errors associated with positive ABO results are:

T F a) over centrifugation

T F b) failure to add active reagents

T F c) use of dirty glassware

T F d) incorrect interpretation of results

T F e) failure to identify haemolysis

3. The antihuman globulin (AHG) test is used for:

T F a) haemolytic transfusion reaction (HTR) investigation

T F b) failure to add antihuman globulin (AHG)

T F c) HDNF investigation

T F d) blood grouping

T F e) investigation of drug-induced haemolysis

4. Concerning the AHG test:

T F a) identifies clinically significant antibodies

T F b) done at 37^0C

T F c) washing cells is a very important step

T F d) is used for investigating haemolytic disease of newborn (HDN)

T F e) the anti-IgG used is usually polyclonal

CANDIDATE NUMBER……

5. The following are reasons for antibody screening:

T F a) to negate the need for serological cross-matching

T F b) to allow early detection of allo-antibodies

T F c) to detect in vivo sensitization

T F d) to detect cold reacting antibodies

T F e) to enable electronic issue only

6. The following can cause false positive reactions in the ABO testing:

T F a) failure to add patient serum/ plasma

T F b) failure to add antihuman globulin (AHG)

T F c) failure to add O-sensitised cells

T F d) over-centrifugation

T F e) failure to identify haemolysis

7. The following factors affect the antigen/ antibody reactions.

T F a) pH

T F b) number of antigenic sites

T F c) storage time

T F d) antigen class

T F e) antigen/ antibody affinity

8. The following are components of the immune system

T F a) Plasma cells

T F b) Mucosa Associated Lymphoid Tissue (MALT)

T F c) CD4 T lymphocytes

T F d) Trophoblasts

T F e) Eosinophils

CANDIDATE NUMBER.....

9. Lymphatic vessels are found throughout the body except

T F a) Skin

T F b) Avascular tissue

T F c) Central nervous system

T F d) Spleen

T F e) Bone marrow

10. The following are primary lymphoid organs

T F a) thymus

T F b) mammary glands

T F c) tonsils

T F d) spleen

T F e) bone marrow

11. Mucus-secreting membranes are found in the...

T F a) urinary system

T F b) digestive cavity

T F c) respiratory passages

T F d) nervous system

T F e) all of the above

12. The following are leukocytes

T F a) lymphocyte

T F b) erythrocyte

T F c) monocyte

T F d) neutrophil

T F e) fibroblast

CANDIDATE NUMBER.....

13. The following lymphocyte is involved in nonspecific immune defense

T F a) T-cells

T F b) B-cells

T F c) Natural Killer (NK) cells

T F d) macrophages

T F e) none of the above

14. Which of the following antigens come from the lactoceramide structure**?**

T F a) A

T F b) Le^b

T F c) D

T F d) c

T F e) P

15. The following antigens are fully developed at birth

T F a) D

T F b) I

T F c) Lewis

T F d) ABH

T F e) P1

16. The following are associated with mixed field agglutination:

T F a) A_3

T F b) A_{el}

T F c) B_3

T F d) anti-Le^a

T F e) anti-LW

CANDIDATE NUMBER……

17. Concerning the Ii blood group system:

T F a) I is a high frequency antigen

T F b) cord cells have a lot of I antigen

T F c) i increases with age

T F d) anti-I reacts best at 4^0C

T F e) anti-i is immune type

18. Concerning the *hh* genotype:

T F a) the back type is discrepant

T F b) there is anti-H in the serum

T F c) there is an apparent O front type

T F d) there is anti-B in the serum

T F e) it is also known as parabombay

19. Which blood group system is known for showing dosage effect?

T F a) Lewis

T F b) P

T F c) Kidd

T F d) Rh

T F e) Kell

20. Match the following pairs.

I	R1	a)	dcE
II	R2	b)	dCe
III	R0	c)	DcE
IV	r’	d)	DCe
V	r’’	e)	Dce

I……II…… III…… IV……..V……

CANDIDATE NUMBER……

SECTION B: [20 MARKS]

I. Answer all questions on separate answer sheets provided.
II. Each question carries 5 Marks.

1. Explain the difference between an 'allo-antibody' and an 'auto-antibody'.
2. Why is homozygosity of antigenic expression, for certain antigens, important for antibody screening cells?
3. List any 5 'major blood group systems' and all their principal antigens.
4. Why is anti-k such a rare antibody while anti-K is such a common antibody?

SECTION C: ESSAY QUESTIONS [50 Marks]

Instructions

i) Answer 2 questions out of 5 in this section.

ii) Each question carries 25 *marks.*

1. Describe the following antibodies:
   a) Anti-D
   b) Anti-K
   c) Anti-A_1
   d) Anti-Fy^a
   e) Anti-Jk^a
2. Describe the Rhesus blood group typing in Blood Bank
3. Give a comprehensive outline of how the A, B, H antigens develop.
4. Describe the Fisher, Wiener and Rosenfield nomenclature systems of the Rhesus blood group system.
5. Write good notes **on each** of the following:
   a. The McLeod Phenotype (5marks)
   b Duffy antigen function and its association with malaria (5 marks)
   c. Describe the unique characteristics of the Lewis blood group system (5 marks).
   d. $Kell_{null}$ K (0) Phenotype (5 marks)